

REMARKS

Claims 1-17, 25-43, 45, 47, 48, 51-53, 57, and 58 were pending and presented for examination and in this application. In an Office action dated November 15, 2005, claims 1-17, 25-43, 45, 47, 48, 51-53, 57 and 58 were rejected. Applicants thank Examiner for examination of the claims pending in this application and addresses Examiner's comments below.

Applicants are canceling claims 2 and 32-58 with this Amendment and Response. Applicants are amending claims 1, 25, and 27 in this Amendment and Response. These changes are believed not to introduce new matter, and their entry is respectfully requested. Applicants do not concede that the subject matter of such claims was in fact disclosed or taught by the cited prior art. Rather, Applicants reserve the right to pursue such protection at a later point in time and merely seeks to pursue protection for the subject matter presented in this submission.

In view of the Amendments herein and the Remarks that follow, Applicants respectfully request that Examiner reconsider all outstanding rejections, and withdraw them.

Response to Rejection Under 35 USC 103(a) in View of Adan and Bohn

In the 1st paragraph of the Office Action, Examiner rejects claims 1-2, 4-7, 9-15, 25-37, 40-43, 45-48, 51 and 57-58 under 35 USC § 103(a) as allegedly being unpatentable in view of U.S. Patent No. 6,531,692 to Adan et al. ("Adan") and U.S. Patent No. 6,538,243 to Bohn et al. ("Bohn"). This rejection is respectfully traversed.

Representative claim 1 recites, *inter alia*, the following:

A system for illuminating a target surface, the system comprising:
a light source, positioned at a first angle relative to a circuit board, the light source configured for emitting light to illuminate the target surface, the first angle being non-perpendicular to the circuit board;
and
a lens having an entrance surface and an exit surface, the entrance surface positioned to gather the light from the light source and the exit surface directing the light onto the target surface, wherein the light emitted by the light source enters the entrance surface and is refracted at a second angle at the entrance surface, passes through the lens, and is refracted at the exit surface at a third angle to illuminate the target surface.

This claimed system uses a light source positioned at a first angle and a lens configured with two more angles for refracting light (rather than reflecting it) in order to guide the light from the light source to illuminate a surface. In turn, this allows a compact illumination system that is useful in, for example, small or compact structural configurations, such as optical mice.

The claimed invention is neither disclosed nor suggested by Adan and or Bohn. Examiner attempts to analogize Adan to the present system, by glossing deficiencies such as the lack of angles. However, these deficiencies point to the fundamental differences between the system in Adan versus the claimed invention. For example, the system in Adan uses an internally reflective lens configuration to manipulate light from a light source for illuminating a surface. There are of angled surfaces; instead of a refractive lens configuration, Adan uses a refractive lens configuration. Thus, the system in Adan inherently has a non-compact configuration as further described below.

To begin with, the system in Adan uses a configuration that relies on reflection techniques rather than refraction techniques for guiding light from the light source to illuminate the surface. Referring to Figure 5 of Adan, it illustrates internal reflection pattern of light as it passes down the straight path of the optical coupler 107. (Adan, FIG. 5). In particular, Adan states that “[l]ight conducting portion 146 acts to conduct the collected light which enters through inlet end 142 axially along lens 107 to outlet end 144.” (Adan, col. 11, lines 24-26). That is, the optical coupler 107 uses reflection techniques to move light down towards the outlet end 144 for passage through the aperture 106.

Next, to implement this reflective system, the system in Adan must be structured to allow light to pass along a straight path. Referring to Figures 5, 6, and 7C of Adan, the system is configured to have light travel straight through from the light source to the illumination surface. The lack of angles means the light is not bent as Applicants’ claim recites. Specifically, as shown in Figure 6, the light source 104 emits light straight into an inlet end 142, straight through an optical coupler 107, out an outlet end 144, straight out the aperture 106, and onto the surface. (Adan, FIG. 6). Moreover, the specification of Adan emphasizes the straight, aligned path of the components of the system. Specifically, Adan recites “it is important that optical coupler 107 and source 104 be well aligned with one another[;] [s]imilarly, it is important that outlet end 144 be well aligned with aperture 106.” (Adan, col. 11, lines 53-57). Hence, the straight light path of Adan results in an elongated structure that is not compact.

Thus, for at least the reasons set forth above, claim 1 is significantly distinguishable over Adan. Moreover, the deficiencies of Adan cannot be rectified by Bohn. Bohn discloses “a contact imaging sensor with a light guide.” (Bohn, col. 2, lines 37-38). Unlike the claimed invention, FIG. 13 of Bohn discloses a light source 816 that is perpendicular to the printed circuit board 818.

In addition, there is no teaching or suggestion to combine the system in Bohn with the system in Adan. First, Adan is an optical pointing device system configured to provide precise alignment of components so that light travels straight through from the light source to the illumination surface using a reflective technique within its lens. In contrast, Bohn is contact image system for making duplicates (e.g., copiers, scanners, facsimile machines) that uses a reflective technique to guide light off of an object to copy. (See Bohn, FIG. 13, col. 12, lines 18-65). There is no disclosure, teaching, or suggestion as to why or how the contact image system in Bohn should be or could be used with the optical pointing device system in Adan or vice versa.

Thus, for at least the reasons set forth above, claim 1 is distinguishable over the combination of Adan and Bohn. Further, the analysis set forth above also is applicable to the dependencies of claim 1, as well as independent claims 25, 27, and 32 and their respective dependencies. Therefore, Applicants respectfully request reconsideration and removal of the basis of the rejection to all these claims and allowance of them at this time.

Response to Rejection Under 35 USC 103(a) in View of Adan and Smith

In the 2nd paragraph of the Office Action, Examiner rejects claims 3 and 8 under 35 USC § 103(a) as allegedly being unpatentable in view of Adan and U.S. Patent No. 6,476,970 to Smith (“Smith”). This rejection is respectfully traversed.

The deficiencies of Adan have already been addressed and Smith does not rectify these core deficiencies. Rather, Smith is duplicative to Adan as it too uses internal reflection techniques for guiding light. (See Smith, FIG.3). Thus, Applicants respectfully submit that claims 3 and 8 are patentably distinguishable over Adan and Smith. Applicants respectfully request reconsideration and removal of the basis of the rejection to all these claims and allowance of them at this time.

Response to Rejection Under 35 USC 103(a) in View of Adan and Bidiville

In the 3rd paragraph of the Office Action, Examiner rejects claims 16-17, 38-39 and 52-53 under 35 USC § 103(a) as allegedly being unpatentable in view of Adan and U.S. Patent No. 6,084,574 to Bidiville ("Bidiville"). This rejection is respectfully traversed.

The deficiencies of Adan have already been addressed and Bidiville does not address the deficiencies of Adan. Thus, Applicants respectfully submit that claims 3 and 8 are patentably distinguishable over Adan and Smith. Applicants respectfully request reconsideration and removal of the basis of the rejection to all these claims and allowance of them at this time.

Conclusion

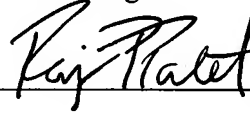
In sum, Applicants respectfully submit that claims 1, 3-17 and 25-31 as presented herein, are patentably distinguishable over the cited references (including references cited, but not applied). Therefore, Applicants request reconsideration of the basis for the rejections to these claims and request allowance of them.

In addition, Applicants respectfully invite Examiner to contact Applicants' representative at the number provided below if Examiner believes it will help expedite furtherance of this application.

Respectfully Submitted,
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Date: March 15, 2006

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